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# STUDIES IN CROSS-CULTURAL PSYCHIATRY

PETER M. FITZER

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STUDIES IN CROSS-CULTURAL PSYCHIATRY

I. Cultural Disintegration and Psychiatric Disorder  
Among the Maya of the Yucatan Peninsula

II. Psychiatric Disorder in Two Rural New York  
State Groups: The Seneca Indians and Their Neighbors

by

Peter M. Fitzer

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Peter M. Fitzer  
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# I. CULTURAL DISINTEGRATION AND PSYCHIATRIC DISORDER AMONG THE MAYA OF THE YUCATAN PENINSULA

Recently several studies have demonstrated, in both Western and non-Western cultural situations, a definite positive correlation between degree of cultural disintegration and prevalence of psychiatric disorder (1,2). This study was undertaken to investigate cultural disintegration and psychiatric disorder in another non-Western cultural group, the present-day Maya of southern Mexico's Yucatan Peninsula.

## AIMS

The study has several aims:

1. To map out the pattern of disintegration of traditional Maya culture, and to determine if increasing cultural disintegration correlates positively with an increasing prevalence of psychiatric disorder.

2. To test Redfield's theory (3) of cultural change in Yucatan, that disintegration of Maya culture is mainly dependent upon the factor of isolation.

In this study random samples of forty Mayas of lower socio-economic class were interviewed in the capital Merida; in a railroad town, Tunkas; and in several rather isolated bush hamlets, X-tohil and NichteHa. Each individual was given, through an interpreter, a questionnaire containing several primary scales: two indices of



disintegration, and three indices of psychiatric disorder. Several other scales were included and will be described below. As a control for the mental disorder scales, the questionnaire was also given to forty Maya psychiatric outpatients of lower socioeconomic background.

#### THE AREA AND PEOPLE: A BRIEF SKETCH

The Yucatan Peninsula has been likened to an island--on the south it is bordered by dense rain forest, on the east by rain forest and the sea, on the north and west by the sea and its hazardous barrier reefs. Until the Colonial period, travel was almost exclusively via the difficult overland route. The land is flat limestone karst country with little soil. There are no surface streams and water must be obtained from eroded natural wells in the limestone, called cenotes. The country is covered by a thorny, deciduous scrub growth. Settlements consequently have always centered around the cenotes. In spite of this lack of surface water, rainfall is adequate and the land is surprisingly fertile, maize being the staple crop since ancient times.

The Peninsula has been inhabited for more than three thousand years. Several civilisations flourished, with their ceremonial centers and pyramids, until about 700 years ago (4,5). However, outside the great centers, life has continued as it had for centuries before--small settlements of maize farmers clustered about the cenotes. About 400 years ago the Spaniards arrived,





bringing with them Catholicism and the plantation system (henequen). While Catholicism spread over the entire Peninsula, the plantations were limited to the northwest. Outside of the cities, towns, and plantations the traditional Maya maize farming pattern was little changed. Maya culture, however, was changing, fusing gradually with Spanish and Catholic elements to make up the present Maya culture. The Mayas have undergone two intense bursts of exposure to European culture. The first was during the early Colonial period. The second is occurring now. Due mainly to roadbuilding during the past twenty years, isolated homogenous communities are meeting contemporary Mexican culture. This contact is primarily through the medium of trade, maize in exchange for modern goods. However, Maya tradition is tremendously strong in the Peninsula even today. Most inhabitants think of themselves as Yucatecans, not Mexicans. Maya, spoken by many of the middle or upper classes, is the most frequent language heard.

Traditional Maya culture, still seen in some very isolated bush hamlets, is characterised as sacred and kinship oriented (6). By sacred is meant a constant awareness of the gods of nature--those of the milpa (cornpatch), the bush, and the rain. Through a sort of mutual agreement, expressed in numerous ceremonies, the Maya fulfills his obligation to the gods and in turn expects a good harvest, good health, and good fortune. If the Maya encounters



misfortune, it is because he was lax in fulfilling his obligations. He must be prudent in his demands of the gods, he must not ask too much. He should respect the natural property of the gods. Just as with the gods, men must respect their proper order of duty and responsibility, and these orders are inherent in the kinship system. In the kin group, one's position in order of respect, authority, and responsibility are clearly defined. Kin relationships are strengthened by rituals of baptism, marriage, death. The individual is merely a small part of the complex ramifications of his kin group. Life is good, secure, predictable.

The dress of Maya women has not changed from the early Colonial days. The basic garment is the huipil, a Mother Hubbard-like dress. This is still the prevalent garment today, although European-style dresses are sometimes worn in the larger towns and cities. Maya men have for centuries worn rough white cotton trousers and shirts, with simple sandals. But again, today more European dress such as dungarees and denim shirts are seen in the less isolated communities.

## GENERAL CONCEPTS AND THE QUESTIONNAIRE SCALES

### Disintegration

In order to understand disintegration, integration must first be described. An integrated social system is characterised by common patterns of behavior, goals, beliefs, and outlooks all woven intricately



together into a common "web of understanding." All members of the system are linked in a mesh of predictable social relationships which satisfy emotional and material needs. Such an integrated system is also a mechanism for its own perpetuation--in spite of internal and environmental buffeting, the basic patterns of the system are maintained from generation to generation. The integrated system is fundamentally benign as concerns factors which might produce mental stresses. According to Leighton (7), the successfully functioning integrated system provides the essentials necessary for successful individual personality development and function: physical security, sexual satisfaction, giving and receiving love, recognition, orientation regarding place in society, membership in a human group, sense of belonging to a moral order, opportunity to interact with different kinds of personalities, expression of hostility and of spontaneity. "Severe deprivation in such matters would result in disruptive acts in one or another part or aspect of the system, while satisfaction along controlled lines would provide powerful incentives for behavior contributing to the maintenance of the self-integrating unit."

Disintegration, then, is an unraveling of the common "web of understanding." The system is no longer able to preserve its basic patterns. Defects in providing a healthy sociocultural environment and failure to satisfy the above essential strivings lead to poor personality formation and function. If these pathological processes progress far enough, the system may no longer be able to maintain itself.



This is not to say, as Leighton (8) points out, that certain forms of psychiatric disorder could not occur in a completely integrated system. Current patterns of socialisation could produce individuals detrimental to the system at a later time. Forms of psychoneurotic behavior such as compulsiveness, and pathological social relations involving dominance and passivity probably would not damage the system and could even promote integration.

When the terms "integrated" and "disintegrated" are used, it must be remembered that they are at best relative terms. There is no such entity as a completely integrated social system, neither is there a completely disintegrated one.

In order to determine the degree of disintegration of particular community units, several sets of indices have been constructed (9, 10). Concepts used in these indices were selected as being applicable cross-culturally, yet concrete enough for actual data gathering:

- high frequency of broken homes
- few and weak associations
- few and weak leaders
- few patterns of recreation
- high frequency of hostility
- high frequency of crime
- weak network of communication
- recent history of disaster
- widespread ill health
- extensive poverty
- cultural confusion
- widespread secularisation
- extensive migration
- rapid social change

All of these indices are not valid indicators of disintegration





in all cultures. Several are quite complex and difficult in actual usage. It has been suggested that the first seven items will be seen in community units that are already markedly disintegrated; while the latter seven items, if present in sufficient severity and length of time, may cause disintegration.

From the above discussion an hypothesis of association of increasing psychiatric disorder with increasing disintegration could be made. This hypothesis was the basis of two large scale studies of the epidemiology of psychiatric disorder among the Yeruba tribesmen of Western Nigeria and populations of both Acadiac and English background in Sterling County, Nova Scotia (11,12). Psychiatric impairment was assessed individually by history and a virtual mental status examination. Data from each individual were reviewed and evaluated by several psychiatrists. Communities were evaluated as to degree of disintegration by means of specific questions based on the concepts listed above. In both instances, as disintegration increased, so did psychiatric disorder. Several other recent smaller studies have produced similar correlations (13,14). Questions of interpretation and cause-effect relationships will be discussed later.

The anthropologist Robert Redfield is responsible for the recently published major ethnographic studies of the Yucatec Maya (15,16,17). According to Redfield, disintegration of traditional Maya culture is an active process at present. A profile of the traditional isolated, homogenous community unit has been given above.



However, as this isolated, homogenous community unit comes into increasing contact with European culture breaks appear. Disintegration, secularisation, and individualisation appear. For example, suppose a Maya gives up agriculture for other employment. He does not now participate in the rituals of the milpa, and hence may cease to share in the understandings of relationships between ritual and health. At the same time perhaps SSA, the Yucatecan Health Department, has sent a man who introduces new ways of treating disease, ways which do not depend upon ritual and the intervention of the gods. The Maya stops attending community rituals, no longer thinks of maize as "sacred," the property of the gods. Here disintegration, secularisation, and individualisation are all seen. Redfield gives several other examples (18). On the basis of his ethnographic work, Redfield maintains that in Yucatan, as isolation and homogeneity ebb, disintegration, secularisation and individualism swell.

In his work, Redfield studies a bush hamlet, a small village about four miles from a highway, a town on a railroad, and Maya in the capital Merida. As isolation decreased, his data showed that traditional beliefs, ideas, practices decreased in frequency--decreasing isolation brought disintegration. In showing this he traced many traditional traits from the bush, to the village, to the town, finally to the city.

In the present study communities of similar degrees of isolation



were studied: the capital city, a small railroad town, and several bush hamlets. However, the bush hamlets probably fall between Redfield's bush communities and small village in regard to isolation. The communities of the present study will be fully described later.

## DISINTEGRATION SCALES

### Redfield's Scale

As mentioned above, Redfield traced many specific traditional Maya cultural traits, and noted their decreasing frequency moving from the bush to the city (19). Fifteen traits discussed by Redfield were selected for the questionnaire (Table I). If Redfield's ethnographic data are valid, then a decreasing frequency of these traits is expected as the city is approached. Through selection of communities in order of decreasing isolation, and through administration of these fifteen trait questions an actual internal check of Redfield's culture change theory is effected. If decreasing frequency of the included traits does not correlate with decreasing isolation, then clearly Redfield's theory is not valid as stated.

### General Scale

For this scale, some of the general indices of disintegration listed above were selected and appropriate questions constructed (Table I). Several indices are rather straightforward in their relationship to disintegration: high frequency of broken homes, hostility, crime, and rapid social change. The others require some discussion.



Poverty: Severe poverty appears to have marked disintegrating potential (20). Many communities and cultures appear to function fairly well even in the presence of poverty, but once a certain threshold, which varies from situation to situation, is reached kinship, social and ritual patterns seem to crumble. While all individuals included in the present study were of the lower socioeconomic class, there was nevertheless some variation within the class. In this study the relative affluence of the individual, as judged from his home surroundings, was subjectively rated on a scale from 1 to 3.

Extensive migration: Because this process removes people from communities, possibly faster than they can be replaced, it may result in unbalance of certain age or sex groups, thus exerting a powerful disruptive influence. Migration with founding of new settlements is an ancient pattern in Yucatan, due to the low population density resulting from inefficient slash and burn agriculture. However, due to recent roadbuilding and increasing importance of trade, migration has no doubt become more prevalent. Consequently, communities were rated as to the number of interviewed inhabitants actually born in the community.

Widespread secularisation: This is a frequent worldwide trend and seems to be accompanied by disruption of other social patterns as well. As mentioned above, Redfield states that in Yucatan this is due to a loss of isolation. Questions based on this index concern decline in belief in certain Maya and Catholic religious factors.





Cultural confusion: This is a situation where elements of two cultures exist simultaneously together, another way of saying acculturation. The individual is faced with two often incompatible means of classifying his emotional environment realities. The disruptive potential here is clear. This may be the most important index in the Maya situation.

Few and weak associations: Disintegration brings decline in certain beliefs and rituals, secular and sacred. Certain questions reflect this particular decline.

It should be noted that many of the questions based on the above indices may actually involve several indices at once. For example, knowledge of modern medical treatment along with secularisation may lead a family not to make "hetzmek," a sort of Maya baptism designed to provide the child with good health. As a result the social relationships and gatherings characteristic of the rite are not carried out, thus weakening group associations. The question "Should one always make hetzmek for a child?" clearly is a function of multiple indices.

## MENTAL DISORDER SCALES

### Twenty-two Item Symptom Scale (Table II)

In order to evaluate degree of mental disorder in this study, a technique not involving extensive individual history taking and mental status examination was needed. During the Midtown Study, an



investigation of mental illness and social class in Manhattan, it was noted that a group of twenty-two symptoms were grossly able to differentiate known mentally ill from random "normals." These items include mainly psychophysiological symptoms (Table II). These items were taken from the Minnesota Multiphasic Personality Inventory and the U.S. Army Neuropsychiatric Screening Adjunct (21). In the Midtown Manhattan cultural setting, it was shown that groups of mentally ill had a statistically significant higher prevalence of these symptoms than randomly selected "normals" (22). These symptoms are probably most sensitive to psychoneurotic and psychophysiological reaction types (23).

Although the 22 Item Symptom Scale has not been used in non-Western cultures under controlled conditions, the very similar Health Opinion Survey (HOS) has been used in a controlled study in a non-Western cultural situation. The HOS was able to distinguish between known well and known mentally ill in the particular culture under study, a St. Lawrence Eskimo group (24). As a similar cultural control in the present study, the questionnaire was administered by a Yucatecan psychiatrist to a randomly selected group of mental outpatients of lower-class Maya background (25).

#### Neurosis Scale of Diaz-Guerrero (Table III)

Diaz-Guerrero, a Mexican psychiatrist, recently constructed an eleven item scale which he used as an index of neurosis in a study of mental health in Mexico City. While this scale



was never adequately controlled, it was included in the present questionnaire in the hope that it might provide a sort of check of the 22 Item Scale which had not yet been validated either (26, 27).

One important point needs to be emphasised concerning the two main scales of mental disorder. The 22 Item Scale is based mainly on the presence of specific somatic complaints, while the scale of Diaz-Guerrero is more concerned with subjective expressions of neurosis. Consequently, the two scales may not be concerned with exactly similar parameters of neurosis. This will be discussed later.

#### Psychotic Symptom Scale

In an effort to distinguish between predominantly neurotic or psychotic symptom patterns, eight questions which in a gross way might be more characteristic of psychosis were selected from the MMPI. Realising that the available control group of mental outpatients were mainly neurotic, and that this scale could not be properly controlled, it was thought nevertheless that it might contribute to the over-all picture of mental illness in Yucatan.

#### Antisocial Behavior Scale

In Euro-American culture antisocial behavior is associated to a high degree with the personality disorders. Although this may not be the case for the Maya culture, knowledge of the frequency of these symptoms in the Maya could be valuable. In the Nova Scotia and Yeruba groups men tended more to acting-out behavior



patterns and women to psychophysiological patterns, depending on degree of disintegration of the particular group (28).

It must be remembered that questionnaire administration to the four Maya groups will show the prevalence of the above symptoms, not the incidence. While incidence infers the frequency of symptoms over a period of time, prevalence is simply a measure of frequency at a particular moment in time.

The questionnaire also contained items concerning background variables, and some items from a scale of Diaz-Guerrero dealing with certain general attitudes of Mexican culture. The various scales were not presented as intact groups, rather the items were freely intermixed in the questionnaire to produce a fairly smooth flow of questions. Where the flow seemed too smooth, too conducive to responses of a similar type no matter the question content, a question about a rather highly charged topic, usually sex, was interposed. Such questions were rather frequent in an effort to assure real consideration of each question asked.

## THE COMMUNITIES OF THE PRESENT STUDY (Figure I)

1. Merida with its 147,000 inhabitants is Yucatan's one true city. In all spheres, government, culture, economy it is the center of the state. Contact with the rest of Mexico and the world is mediated through the city's transportation and communication facilities. The inhabitants range from the upper class of Spanish extraction down





to the lower class of Maya background, and all intermediates are represented. Spanish is the main language and has the most prestige because of its connections with the upper classes and its importance in communication with the outside world. But probably up to twenty-five per cent of the population are bilingual, and are generally more at home in Maya than Spanish. The city centers around a large plaza which is the area of commerce and business. Houses here are large, multi-level, masonry construction, and belong to the old wealthy families of Spanish background. As the periphery is approached, the dwellings become smaller and humbler, until a fringe area of unpaved streets with typical traditional oval, single-roomed, thatched roof dwellings is reached. Many of these dwellings are constructed in the ancient wattle and daub fashion. The inhabitants here are of predominantly Maya background, and Maya is the common language. Agriculture is no longer the principal occupation, and most work at various unskilled jobs. Persons interviewed in Merida were taken from such areas.

2. About ninety km to the east of Merida on the railroad is the town of Tunkas. The entire township has about 2,600 inhabitants. Tunkas probably was founded before the Conquest, and was reached by the railroad in 1902. In many respects the town appears intermediary between the bush country and the city. It is a minor economic center, where many farmers sell their corn to merchants who then ship it to Merida. The town centers about a plaza. Here are located the school,



municipal hall, several small stores and soft drink stands, church, some homes. Construction here is masonry. Although everyone speaks Maya, one might hear Spanish and may see departures from traditional Maya dress. The families of the plaza have many contacts, social and economic, with the city. Away from the plaza dwellings are no longer masonry but the traditional oval thatched roof house of the milpero (corn farmer). Here dress is traditional and little Spanish is heard. These changes occur in a matter of about one hundred meters. The central plaza also contains a well-used basketball court and a new but unused health clinic building. The railroad station, Evangelical Church (about thirty years old), and several cantinas are about 150 meters from the plaza. There is a woman in town generally acknowledged to be a hecicera (witch) and an h-men or traditional Maya shaman. There is no electricity, and in the evening the people gather in the dark on the plaza's benches to sip a soft drink and discuss the happenings of the day. Within the last decade a new road with bus service has connected Tunkas with the larger town of Izanal.

3. NictēHa lies about twenty-two km. to the south of the Merida-Vallidelia highway. The hamlet of Ticimul is between NictēHa and the road. The trail to NictēHa is crude, but has been improved over the past few years so that an occasional jeep may travel as far as Ticimul. From Ticimul travel is by foot or mule. The present hamlet of NictēHa is about seventy-five years old. It



consists of a cluster of thatched homes about a small grassy plaza with two small masonry buildings, a home and village hall. The village hall was built in 1955, the house is slightly older. There is no school. SSA, the national health department, visited the hamlet only once, two months before the present interviews. Fourteen families live in NictéHa with a total population of about seventy. Agriculture is the principal, almost exclusive occupation of the men. There is no church. Although there is no electricity, portable radios are frequently heard. Only several adults could speak Spanish.

X-tohil is five km. to the west of NictéHa by a narrow bush trail. It is very similar in most respects to NictéHa. It is not as old, having been founded about forty years ago. The population includes thirty-six adults and fifty-four children. The only masonry building is the school, which was built in 1953. It has been used only for a total of about five years on a sporadic basis. As in NictéHa, agriculture is the principal occupation and few are able to speak Spanish. Dress is traditional. X-tohil is about nine km. east of Chan Kem, a village-size community included by Redfield in his study.

As mentioned above, the groups in Merida and Tunkas of the present study are very similar to the groups studied earlier by Redfield. X-tohil and NictéHa are not truly isolated bush hamlets, but probably fall somewhere between Redfield's bush hamlet and small village as concerns degree of isolation.



## SAMPLING TECHNIQUES

Several traits of Maya culture that concern interviewing should be noted here. Traditionally, a Maya woman should not talk with strange males unless her husband or other close male relative is present also. This is true of the rural setting more than in the city. Also, due to their agricultural activities, men were frequently absent during the day. Since the Maya usually retire early to waken about dawn, there was little time left for interviewing in an acceptable social setting. These problems were avoided on the whole by selecting rainy days for interviewing. On such days both men and women were usually at home, and the women would consent to the interview knowing that husbands were close at hand.

The sampling techniques for the three communities were basically similar:

Merida. Six "colonias" or wards on the outskirts of the city were visited. As previously described, these areas are characterised by crude strees, oval thatched dwellings, prevalence of Maya language and traditional Maya dress. If more than one acceptable respondent was present in a particular house, the one to be interviewed was selected by coin or die toss. As mentioned above, by interviewing on rainy days it was possible to avoid most bias producing situations. The few masonry dwellings present were avoided as they represented a transition to the middle classes and this study is limited to the lower class in all three community situations.





Tunkas. The methods used in Merida were also used here. Since the town is roughly arranged in a gridiron pattern, ten interviews were allotted to each of the four cardinal quadrants. Starting from the plaza alternate dwellings were sampled, moving from the plaza to the outskirts. Men and women were interviewed alternately, and were selected as in Merida. As in Merida, the few larger masonry houses around the plaza were not sampled.

NicteHa and X-tohil. Sampling methods here were different than those of Merida and Tunkas. Since each hamlet had no more than ten to thirteen dwellings, sampling based on house units would be impractical. Rather, lists of all adults between twenty and fifty-nine years were obtained from the "comisario" or mayor of each hamlet. Individuals to be interviewed were then selected randomly from the lists. Fortunately for the sampling, it rained heavily on the days NicteHa and X-tohil were visited.

All interviewing was done by two male interpreters. Both are Yucatecans, university trained linguists, fluent in Maya and Spanish. While both spoke English, only one was actually fluent. Whenever possible, all interviewing was done in Spanish. However, a carefully prepared Maya version of the questionnaire was available, and saw much use in Tunkas and the bush hamlets.

From Table IV it can be seen that the age distributions of the Merida, Tunkas, and bush samples are generally similar. This indicates that the three samples are probably random, but may mean



that subtle uncontrolled bias, if present, were similar for all samples.

## RESULTS

Because of varying numbers of responses involved among the component scales of the questionnaire, the methods used in statistical analysis were not always the same for each scale. Consequently, the results of each scale with its particular statistical methods will be presented below. Relatively little will be made of data according to both age and sex breakdown. Due to the small numbers of respondents in the resulting groups, it is felt that chance plays a very large part in any percentages that might be mentioned. Hence, only striking differences will be referred to in the presentations of individual scales.

### 22 ITEM SYMPTOM SCALE

Only the number of positive responses, indicating symptoms, were considered as the number of non-responses was uniformly very small for each item. The four groups were ranked 1 - 4 for each question according to the number of positive responses, rank 1 indicating the highest number of such responses, etc. Ranks and groups were then arranged in a table:

Rank	1	2	3	4	Mean Rank
Merida	2	14	6	0	2.18
Tunkas	6	8	8	0	2.09
Bush	1	1	4	17	3.77
Control	16	2	3	1	1.50



An  $X^2$  table was then set up for each group to test the Null Hypothesis, that the rank distribution of the group could be due only to chance. In the case of each group,  $p=0.05$ , indicating that the rank distributions were not due to chance. Because of the large number of responses involved, the mean ranks in the above table are probably valid. The responses for individual items are given in Table II.

In the table below, the results are presented as mean number of positive responses for the individuals of the four groups taken both as a whole and broken into sex groups. Since standard errors are not given, the data are not absolute but may serve to indicate general trends:

Means:	Individual	Male	Female
Merida	8.3	6.2	10.2
Tunkas	8.6	9.5	7.9
Bush	3.2	2.8	3.6
Control	10.8	10.2	11.2

The results were also broken down according to age groups, 20 - 40 and 40 - 60 years. The data are given as percentages of total number of positive responses possible. The number of respondents in each group is also given.

Age	20-40		40-60	
	# res	%	# res	%
Merida	23	41.5	17	43.0
Tunkas	24	65.5	16	38.4
Bush	28	13.6	12	21.9
Control	32	55.0	8	43.2



Again, these data for age may not be rigorously significant because of the small numbers of respondents sometimes involved, but are useful for delineating trends.

### NEUROSIS SCALE OF DIAZ-GUERERO

These data were treated in the same manner as the 22 Item Scale. Each group was ranked for each question and a similar table was set up:

Rank	1	2	3	4	Mean Rank
Merida	1	9	1	0	2.01
Tunkas	1	1	9	0	2.73
Bush	1	2	0	8	3.37
Control	7	1	0	3	1.91

P values for each group were again  $p=0.05$ , thus substantiating the mean ranks. Responses for individual questions are given in Table III.

The data are given below as percentages of total possible positive responses for total groups and sex sub-groups. There were forty respondents in each total group and twenty in each of the sex sub-groups.

	Total %	Male %	Female %
Merida	49.5	41.4	53.7
Tunkas	37.3	35.9	38.6
Bush	23.9	26.8	20.9
Control	53.4	48.2	57.7

Data for the 20-40 and 40-60 age groups are given below as percentages, and number of respondents in each group is listed:





Age	20-40		40-60	
	# res.	%	# res.	%
Merida	25	28.7	15	46.1
Tunkas	24	41.7	16	29.5
Bush	28	29.2	12	26.5
Control	33	53.9	7	52.0

Note that although the complete tables for breakdown according to both age and sex will not be presented here, the high percentages for the 22 Item Scale and Diaz-Guerrero Scale 20-40 age groups are due to the female component of each group. This is true also for the higher percentages of the Merida 40-60 groups for the two scales. The male-female figures are quite similar in all other groups.

#### PSYCHOTIC SYMPTOM SCALE

The four groups were ranked as previously described:

Rank	1	2	3	4	Mean Rank
Merida	3	6	2	0	1.91
Tunkas	4	5	2	0	2.09
Bush	1	0	1	9	3.62
Control	3	1	6	1	2.45

Null Hypothesis was tested by  $X^2$ , and for all groups  $p=0.05$ . Responses of individual questions are given in Table III.

The results are given below in percentages for age groups:

Age	20-40		40-60	
	# res.	%	# res.	%
Merida	23	42.3	17	43.3
Tunkas	23	49.8	17	32.1
Bush	28	9.8	12	10.6
Control	32	36.8	8	31.9

#### ANTI-SOCIAL BEHAVIOR SCALE

Because of the small number of items involved (7), the



data will be given in terms of simple percentages of total number of positive responses. There were forty respondents in each total group and twenty in each sex sub-group.

	Total %	Male %	Female %
Merida	35.3	34.3	35.4
Tunkas	28.5	32.1	25.0
Bush	21.4	34.3	8.6
Control	21.4	29.3	13.6

For age groups the data are:

Age	20-40		40-60	
	# res	%	# res	%
Merida	24	35.7	16	34.8
Tunkas	23	28.6	17	30.5
Bush	28	18.9	13	29.7
Control	32	19.7	8	28.8

Looking at the results by both age and sex, a point should be made about the above table: the low figures for the Bush and Control female groups is due to the very low percentages of the 20-40 aged females.

## DISINTEGRATION SCALE

In the main scale thirty-three items were included. Individual items are listed in Table I. The Merida, Tunkas, and Bush groups were ranked 1-3 on each item according to the number of responses indicating integration. This approach is based on the assumption that responses directly indicating disintegration and "don't know" responses must be considered together as an index of disintegration. Since the integration responses are the reciprocal of the direct disintegration and "don't know" responses taken as a total,



and since disintegration avoids the need of totaling the other two responses, it will be used in this presentation. The following table was constructed:

Rank	1	2	3	Mean Rank
Merida	7	6	20	2.39
Tunkas	17	13	3	1.57
Bush	11	18	4	1.79

The Null Hypothesis was ruled out with an  $X^2$  test,  $p=0.05$  in all three groups.

As a separate check of Redfield's hypothesis of culture change, reflected he says in a decrease in frequency of certain traits as the city is approached, items concerning specific traits will be analysed separately. These fifteen items are included in the main thirty-three item scale described above. Most of these items are mentioned specifically by Redfield, and all are discussed at least in general terms. A rank table was constructed:

Rank	1	2	3	Mean Rank
Merida	3	4	8	2.33
Tunkas	8	6	1	1.53
Bush	5	6	4	1.93

However, the Null Hypothesis could not be ruled out by means of the simple  $X^2$  test. An analysis of variance of the mean ranks was consequently performed. The  $p=0.05$  strongly suggests that the mean ranks are significant as stated. (For a most readable discussion of the technique of analysis of variance see reference 29.)



## DISCUSSION

### A. Social Disintegration and Psychiatric Disorder

This study was undertaken with one main hypothesis: social disintegration is associated with high prevalence of psychiatric disorder. This association has been shown among the English-Acadians of Sterling County, Nova Scotia and the Yeruba of Western Nigeria. Supportive evidence has been provided by small studies among Eskimo and Mexican groups (30,31). The exact causal relationship between disintegration and mental disorder is not completely clear, but two main theories have been forwarded. It has been discussed above how disintegration, by interfering with community and family function in providing the ten basic human needs, might affect personality development and function and hence produce psychiatric disorder. It may also be possible that disintegration might produce mental disorder by physiological means, by promoting vitamin deficiencies, certain viral infections, syphilis, birth and head trauma, etc. Alternatively, it has been suggested that perhaps in certain circumstances, personalities impaired by psychiatric disorder are precipitated together by social processes to form disintegrated communities, the "drift theory" (32). However, evidence from the Sterling County and Yeruba studies strongly support the former theory that disintegration fosters psychiatric disorder (33,34). But it must be remembered that the "drift theory" and probably other factors are involved in minor ways (35,36).





The relationship between physical and mental illness among the Maya is not clear. Because of the pilot nature of this study, little attempt was made to control this factor. An area such as Yucatan supports a fair variety of tropical diseases (37) and it might be expected that this might increase the number of physiological symptoms reported. In the Yeruba study, it was found that poor physical health was closely associated with poor mental health. The opposite was found also, good mental and physical health being associated (38). But causal relationships are not clear-cut: perhaps psychological tensions can somehow alter the internal physiology so that it is less favorable to the owner and healthier for worms, germs, and other visitors (39). It cannot be said whether the physical or psychiatric troubles come first.

From the results of the present study presented above it appears that the association of cultural disintegration with high prevalence of mental disorder in Yucatan is not completely clear-cut:

Relative Ranks	22 Item	R. D. Neurosis	Disinte- gration
Merida	2	1	1
Tunkas	1	2	3
Bush	3	3	2

It is clear that there is a definite and considerable difference in psychiatric disorder between the Bush on the one hand, and Merida and Tunkas on the other. The Bush shows a much lower number of symptoms on both the 22 Item Scale and Diaz-Guerrero's Neurosis Scale. The differences between Merida and Tunkas are quite small,



but are probably statistically significant. Again it must be remembered that the 22 Item Scale is based on psychophysiological symptoms, while Diaz-Guerrero's scale is based on rather subjective expressions of underlying neurosis. On the disintegration scale Merida ranks as most disintegrated, followed by the Bush, with Tunkas least disintegrated.

There are several possible interpretations of these data:

1. Possibly the psychiatric disorder and disintegration scales are in fact not valid measures of these factors.
2. The data are meaningful as stated, and indeed disintegration is not associated with high prevalence of psychiatric disorder in Yucatan.
3. Perhaps some of the rather small differences between mean ranks, although statistically probably significant, may be due to some uncontrolled bias.

These three interpretations will be considered separately below:

1. It is quite certain that the 22 Item Scale and the Neurosis Scale of Diaz-Guerrero are indeed able to differentiate grossly between known psychiatrically ill and supposed "normals." This is nicely shown by the fact that the control group of predominantly neurotic psychiatric outpatients displays a higher number of symptoms than any of the other groups tested. However, the greater spread between the mean rank of the psychiatric outpatients and the other groups on the 22 Item Scale than on Diaz-Guerrero's Neurosis Scale suggests that the former scale is



more sensitive. These scales provide a gross, but valid psychiatric evaluation.

The disintegration scale presents a more complex situation, as two distinct approaches have been utilised: the general indices of disintegration listed by Leighton, and the ethnographic data of Redfield. As stated earlier, probably not all of the general indices of disintegration would apply in the case of the Yucatec Maya, but that taken as a whole a reasonable profile of disintegration could be constructed. The question of factors unique to Yucatan and their effect on the general indices of disintegration should be raised. On consideration of the individual items in the light of existing ethnographic data for Yucatan, only several incompatibilities are obvious. Migration is an ancient pattern in Yucatan. Due to the slash-and-burn system of agriculture, there is a definite limit to the population a particular area can support. Consequently young men, often with their wives, must move to uncrowded lands. In this way new hamlets are founded. This probably explains the fact that many of the bush people were born elsewhere. These are the people who migrated out to found new communities. One would not expect such traditional migrations to be disruptive, unless perhaps psychiatrically disturbed persons were somehow selected to migrate. According to the "drift theory" the resulting communities would tend toward disintegration. But this is apparently not the case in the bush hamlets of this study, as evidenced by their low number of symptoms.



Income and general socioeconomic level may not be directly pertinent to disintegration. This is shown by the fact that Tunkas had a distinctly lower average income but gave the outward appearance of being most prosperous. But unless there are much more subtle factors playing a strong part here, it is difficult to state why the general indices of disintegration should not apply to Yucatan. In the absence of any positive evidence to the contrary, it is probably that the general indices of disintegration do indeed apply to the Yucatan situation.

Again though, it must be remembered that the data under discussion have come from a simple, unsophisticated "pilot" type study, and hence might be subject to considerable internal variation. A larger study with a more sophisticated questionnaire and larger sample groups would no doubt clear up many present problems of interpretation.

2. If the data are assumed to be meaningful as stated, Merida has both the highest number of symptoms and the highest level of disintegration. The situation in Tunkas might be due to the fact that the town has been in railroad contact with Merida for over fifty years. This long gradual exposure to European influence may have allowed sufficient time for reorganisation, for social stabilisation. At this new level of organisation, ways for working out the problems of disintegration have appeared. Attitudes and goals have adjusted, and the town has fewer symptoms and a higher level of integration than the city. But in the bush the picture is different. European contact has not come gradually as in the town. Rather, because of road building during the





past decade, disrupting influences have come suddenly in a massive deluge. Disintegration is proceeding rapidly, as evidenced by the bush mean rank on this scale. But at the same time symptoms are not yet greatly increased in frequency. This is because disintegration may act mainly on the developing personality, inadequacies in development becoming manifest in later life. This scheme would also account for the low number of symptoms of antisocial behavior seen in the bush. In order to establish this scheme, a longitudinal study of incidence, not prevalence of symptoms is needed. Incidence may well be on the rise in the bush but this cannot be shown with the present data. The history of recent road building with influx of European traits into the bush lends suggestive support to the above scheme.

The situation in Tunkas and the bush hamlets might be compared to patterns noted in first and second generation descendants of immigrants to the United States (40). The first generation tends to reject its particular ethnic heritage in an attempt to become a part of its new cultural environment. However, the second generation tends back toward more definite identification with its particular ethnic traditions. Perhaps the bush hamlets could be likened to the first generation--although they are not immigrants, a new cultural environment is being presented to them. They may tend to reject the old ways. However, the Tunkas people have been in contact with this new cultural environment for a longer period and represent the second generation that has tended back to the old Maya ways.



The developmental defects in personality caused by its first generation past may be emerging giving rise to the higher frequency of mental disorder noted in the second generation.

3. Assuming that uncontrolled bias accounts for the small, probably significant, differences in mean ranks on the symptom and disintegration scale, the situation does not change much. Lumping groups together that are separated by only small differences in mean rank puts Merida and Tunkas at the same symptom level with the Bush lower. On the Disintegration Scale, Tunkas and the Bush would be at the same relatively integrated state as compared with the disintegrated city, Merida. This still leaves Tunkas as relatively integrated yet with a high number of symptoms of psychiatric disorder.

The most likely interpretation would appear to be the second, which seeks to explain the observed data on the basis of differential rates of disintegration and the length of time they have been operating in Tunkas and the Bush. There is very little evidence contradicting this theory, but negative evidence is unconvincing. The particular histories of the bush communities tends to lend support. The issue could be settled by a similar study of a very remote and isolated bush community. As mentioned above, finding such a community will be quite difficult due to the rush of recent road building.

#### B. Redfield's Theory of Culture Change

A subsidiary aim of the present study was to test Redfield's



theory of culture change and the data upon which it is based in a similar field situation. The data show Redfield's ideas to be probably in error. He postulated disintegration existing as a function of isolation and homogeneity. Disintegration is manifest in the decreasing frequency of certain Maya traits, moving from the bush to the city. This is certainly not the case at the present time. Perhaps the social reorganisation in Tunkas and the recent rapid acculturation of the Bush have changed the situation. Again, study of a truly isolated community might resolve the problem.

Several points concerning certain groups of items of the disintegration scale should be noted. It might be expected that cultural traits involving rites of passage: rituals of birth, baptism, death, would remain long after disintegration has disposed of other, less personal, less emotional traits. Certain questions can be seen to concern rites of passage (Table I). In the majority of cases, the number of traditional responses in Tunkas and the Bush is about double the number of the Merida group. On the other hand, the questions about the causes and cures of illness, certainly less central to the life flow than rites of passage, have roughly equal numbers of traditional responses in all three groups. This lends some small support to the differential rate of disintegration scheme. Further support may come from the items concerning the position of the older brother and the choice of the marriage partner. The number of traditional responses in



Merida and Tunkas is more than double that of the Bush. This may represent a secondary phenomenon, the acquisition of Spanish ideas by the two Maya groups. In the Spanish colonial family, the position of the older brother was supreme and the parents, of course, chose the marriage partner. Perhaps the Bush, although undergoing rapid disintegration, have not yet had the length of exposure to Spanish mores necessary for adaptation of actual traits. Other specific items were not mentioned as the spread of responses was much smaller than the two-fold spreads discussed above.

## EPIDEMIOLOGY

Although the epidemiology of symptom patterns for age and sex groups has been worked out in a variety of cultures, there appear to be few general cross-cultural trends. Rather, the epidemiology of symptoms seems to depend on the particular "webs of understanding" of culture under consideration, its degree of integration-disintegration, its acculturation status in respect to other cultures. At this time the changing patterns of life in Yucatan should be discussed. Traditional bush life is well structured, secure. All are comfortably and predictably joined by the "webs of understanding." Sex roles are well defined: man in the milpa, woman in the home. But when culture change and disintegration start to work on traditional structure, the woman seems to bear the greatest stresses. The role of the man does not change greatly, he must still provide for himself and his





family. Granted, the means change but the basic pattern survives. But the woman's world undergoes great changes, in a word, independence, not always by choice. This is manifest in the increased number of roles available to the woman. She may remain in the home, but her husband may leave her. She may go to work, as a servant or in a shop. She is faced with many conflicts of sentiments and beliefs concerning her traditional role, her present role, and possibly the role she aspires for in the future. Her life is far more uncertain than the male's.

This observed scheme seems to be borne out by the data. It is perhaps most clearly mirrored in the disintegration scale. Here women consistently show fewer responses characteristic of integration than men. Women also seem to be more prone to psychiatric disorder.

The above observations would expect the greatest stresses to be upon the younger groups who must undergo personality development under changing cultural conditions. This is indeed shown by the age distributions of the control sample of mental outpatients, Table IV. The mean age of this group is much younger than the less ill community groups. The epidemiology of individual questionnaire scales will be considered below.

### 1. Psychophysiological and Psychoneurotic Symptoms

Since the 22 Item Scale is concerned with psychophysiological symptoms and Diaz-Guerrero's Scale with neurotic symptoms, it is



possible these might give rise to two patterns among the age and sex sub-groups of the three communities. However, there is some overlap between the two scales, and so they will be compared in a relative, rather than absolute, way.

Looking at the three communities, it is clear that there is a gross differential in ranking: Tunkas shows more psychophysiological symptoms than Merida, while Merida in turn has more psychoneurotic symptoms than Tunkas. Possibly disintegration is associated with a decline in psychophysiological symptoms and an upswing of psychoneurotic symptoms.

It is interesting to compare the mean number of symptoms from the several groups sampled with the 22 Item Scale. These are presented in Table IX. The Bush figures are of the same order as the Midtown and Humphery groups. But the Tunkas and Merida figures are very much higher than these and are also higher by far than the Seneca and Mexico City groups. This suggests that the Maya cultural system is quite sensitive, reacts to stress in a vigorous manner. It should be noted that the means given are all based on different sample sizes, and that standard errors are not included.

In regard to age, there are no general trends on either scale. There is no evidence that symptoms are related to increasing age. But there are two interesting exceptions. Tunkas women of 20-40 age group and Merida women of 40-60 age group show very high frequencies of



both symptom patterns. From the above discussion of the different stress intensities facing men and women, it could be predicted that Tunkas women would show many symptoms. But what of the Merida women of age 40-60? Only speculation is possible as the variables are many and complex. Perhaps if the Tunkas young women show many symptoms because of anxiety about their uncertain future, the older women of Merida may show symptoms because of disappointment with their unhappy past.

Females generally show more of both symptom patterns than men. Again, exceptions exist: Tunkas males have more psychophysiological symptoms than females, and Bush males have more psychoneurotic symptoms than females. The fact that Merida females have more of both symptom types suggests that the exceptions noted reflect increasing disintegration in some way.

## 2. Antisocial Behavior Scale

This scale probably gives a rough approximation of the prevalence of personality disorders. Interestingly, males in all three communities show the same prevalence. But the females show an increasing prevalence as the city is approached. Apparently this symptom pattern bears no relationship to disintegration among males. But the females show a steady increase from bush to city, showing some connection with disintegration. Since this is a four-fold increase, it indicates that women react to culture change and disintegration principally with acting-out behavior rather than with physiological or neurotic



symptom formation.

There appears to be no correlation between increasing age and prevalence of this symptom pattern.

### 3. Psychotic Symptom Scale

Again an increase in these symptoms is seen from bush to city, and again there does not seem to be any correlation between number of symptoms and age. The question arises whether the psychiatric disorder associated with culture change and disintegration is manifest mainly as neurosis or psychosis. It is not possible to estimate the relative prevalence of psychoses and neuroses with the data from this study. It is also very difficult to estimate trends in incidence of neurosis and psychosis over the past five decade period of profound culture change in Yucatan. During most of this period mental treatment facilities in Yucatan consisted of the Ayala Asylum in Merida. Some figures for the period 1926-1936 exist, but are not easily interpreted due to their undefined diagnostic categories (Table V). They do show that psychoneuroses did not reach the hospital. In the past decade a mental outpatient clinic was established in Merida but no records are available. Detailed records from Ayala Asylum are given in Table VI. Again it is seen that neurotic patients are not hospitalized. An increase in schizophrenia and decrease in manic-depressive psychosis from 1936 are present, but little more can be said. The rather high prevalence of nutritional and toxic psychoses at





present should be noted. Most important, through all this time there are no data for the neuroses. If Ayala Asylum statistics for a recent year are considered, it will be noted that about thrity-two per cent of patients admitted have Maya surnames (Table VII). The ratios of diagnoses are similar between this group and the 1956-1964 figures as a whole (Tables VI and VII).

Tentative diagnoses of the forty lower-class Maya psychiatric outpatients of the control group are listed in Table X. Anxiety reactions were the most prevalent, followed by neurotic depressive reactions. Obsessive-compulsive and conversion reactions were infrequent.

In the Yeruba and Sterling County studies the prevalence of psychosis was extremely low compared to the several neurotic sympom patterns. In Sterling County an increasing prevalence of psychosis did not appear to be associated with disintegration (41). The Maya data suggest that the opposite trend might be true among this group (see results of psychotic symptom scale).

It will be noted from the responses to individual items on the various scales that certain items are highly discriminatory between certain groups. For the most part the reasons for this are unclear, and individual examples will not be discussed. It is interesting that the majority of the Psychosis Scale items have very low or no prevalence in the Bush. This hints that perhaps paranoid symptoms are somehow a function of a dense social environment.



## II. PSYCHIATRIC DISORDER IN TWO RURAL NEW YORK STATE GROUPS: THE SENECA INDIANS AND THEIR NEIGHBORS

Most members of the Seneca Nation of Indians live on or about a small reservation in a rural upstate New York county. Unlike the Maya, the Senecas have been in very close contact with Euro-American culture for over two hundred years. Yet traditional Seneca culture, including the Seneca religion, has been preserved on the reservation. In the summer of 1964 a study was conducted to investigate relationships between psychiatric disorder, as estimated by the 22 Item Symptom Scale, and disintegration of Seneca culture, measured by survival of certain basic traditional Seneca beliefs. In order to provide a baseline for the two main scales, a group of rural non-Senecas of similar socioeconomic class from the same county were given the same questionnaire.

### AIMS

The study had two principal questions for investigation:

1. Is disintegration of Seneca culture associated with a high prevalence of psychophysiological and psychoneurotic symptoms. Hypotheses linking cultural disintegration and the production of psychiatric disorder have already been discussed. However, the long and close Seneca contact with Euro-American culture, along with successful preservation of traditional Seneca culture by a significant number of tribal members, produces a rather unique situation. Would disintegration be associated with increased prevalence of psychiatric



disorder in such a situation? On the other hand, perhaps the very long period of exposure to Euro-American culture has allowed sufficient time for successful reintegration with greater emphasis on Euro-American culture.

2. Which age, and particularly sex, Seneca sub-groups would show the highest number of symptoms? Since World War II changes have come to the reservation. An increased awareness of the many differences between Seneca and non-Seneca life has developed. This has been accentuated by the relocation of many Seneca families in 1964 as a result of construction of the Kinzua dam which will flood much of the reservation. Non-Indian life has much more to offer socially and economically. In spite of professed pride in Seneca ancestry, one receives the definite impression that perhaps it would be better not to be an Indian. This escape from race and tradition is fairly easy to accomplish for Seneca men. From childhood they are less closely bound to the home than women. Army service moves them far away from the reservation, both geographically and culturally. It is not unnatural to settle away from the reservation when military service is over.

For the Seneca woman, the desire to escape is stronger but much more difficult to carry out. The woman is more aware of her Indian status. She has been closely associated with a more-or-less traditional household. She wants more for her future children, both



socially and economically. Marriage to a non-Indian is highly desired but this desire is seldom verbalised. Tradition is strongly against all this. It is very difficult for a woman to simply leave the reservation to start another life somewhere else. This whole situation is similar to that observed among an Eskimo group exposed to American culture (42). As a result of these factors it could be expected that Seneca women might show a higher prevalence of psychiatric disorder than men, and that this trend would show up better in the younger age groups.

## THE AREA

### Cattaraugus County (Figure II)

Cattaraugus County has 80-376 inhabitants, forty-one per cent of whom are concentrated in two cities. The remaining are distributed among small villages and farms. In the southwestern section of the county is the Allegany Reservation of the Seneca Nation of Indians.

Senecas were living in western New York when the first European, the Frenchman, Etienne Brule, visited them about 1610. Members of the powerful Iroquois Confederacy, the Senecas continued to reside in the area and were given their present reservation in a treaty signed by George Washington in 1795. At the present time, about 1059 Senecas occupy the reservation in a typical rural pattern of scattered houses with several hamlets. However, little farming is





practiced as most find employment in nearby communities. Tribal affairs are handled by a council and an elected president of the Nation. Many of the Senecas maintain the traditional Indian culture with its religion, language, and healing societies (43,44). These more traditional Senecas are clustered in the area surrounding the Long House, the religious building. Some of these Senecas speak only Seneca and do not know English. There is an Indian elementary school which many of the Indian children attend. All attend neighboring public high schools. Because of construction of the Kinzua Dam and subsequent flooding of a large part of the reservation, many Senecas are being relocated in two resettlement areas on the eastern part of the reservation.

The Township of Humphrey has about 120 households on farms and in three hamlets. Farming is the principal occupation, but some find employment in the neighboring larger communities. The township has several churches, a general store, a beauty shop, but no school.

#### SAMPLING TECHNIQUES

Two random samples (Senecas, 38; Humphrey, 42) were drawn from the reservation and from Humphrey. Respondents were limited to the age range of 20 to 59 years and the lower socioeconomic class. The sexes were equally represented in each sample. For the Seneca sample, a list of all adults meeting the above criteria was prepared from the Tribal Roll, and individuals were selected by means



of random numbers. This method was not possible in Humphrey. There, all houses were numbered and then certain houses selected by random numbers were visited. If the house contained adults meeting the above criteria of age and social class, they were randomly sample by die toss and interviewed. In half of the houses so selected males were to be interviewed, females interviewed in the remaining half. The age distribution of the two populations interviewed are similar (Table IV).

## QUESTIONNAIRE

Three scales were included:

### 1. 22 Item Symptom Scale

This scale has already been described and will not be discussed further.

### 2. Disintegration Scale

Because of the limited scope of this study, this scale was limited mainly to several key items dealing with participation in Seneca religious and healing rituals. The institutions and beliefs included in these items really form the core of Seneca culture, and it is felt that a drifting away from these core beliefs might reflect disintegration fairly well. Several other items secondarily connected to these core ideas were also included (Table VIII). For a most thorough discussion of individual items involved, see references 43 and 44.



### 3. Background Scale

From these items, and from the interviewer's impression of the individual and his surroundings, the socioeconomic status of the individual was determined. Discussions of factors defining socioeconomic status are rather lengthy and complex, and will not be repeated here. Srole, et al. (45) gives a complete presentation. Important factors in this study are education (high school or less), occupation (manual, unskilled), and the interviewer's impression of the individual's "affluence" (slight). Individuals meeting these criteria were assigned to the lower socioeconomic class.

## RESULTS

### 1. 22 Item Symptom Scale

Since only two groups, Seneca and Humphrey, are to be compared for most parameters simple means with standard errors will be employed.

	Total	Male	Female
Seneca	$4.42 \pm 0.7$	$2.7 \pm 0.7$	$5.1 \pm 1.4$
Humphrey	$3.36 \pm 1.2$	$3.3 \pm 1.1$	$3.5 \pm 1.1$

There is no significant difference between the total mean symptoms of both groups, and between Seneca males and Humphrey males and females. But Seneca females show a significantly higher mean than any of the other groups.

Mean symptoms for the age breakdown are given below:



	Seneca	Humphrey
20-29	3.0 $\pm$ 1.1	5.1 $\pm$ 2.8
30-39	4.1 $\pm$ 1.7	3.4 $\pm$ 2.3
40-49	4.2 $\pm$ 1.0	3.5 $\pm$ 1.3
50-59	5.2 $\pm$ 0.6	2.4 $\pm$ 0.8

From inspection of these figures, it can be seen that there is probably no significant increase in mean symptoms with increasing age in either group. It should be noted, however, that while, the results may not be significant statistically, they may none the less indicate general trends.

Figures for Seneca age and sex breakdown are presented as per cent of symptomatic responses to total possible number of symptomatic responses.

Age	Male	Female
20-39	11.1	21.0
40-59	14.1	26.5

This shows women to have about double the number of symptomatic responses than men in both age categories. The slight increase in symptomatic responses with age is not significant.

## 2. Disintegration Scale

Older Senecas tend to show more traditional Seneca responses:

Age	Mean Number Traditional Responses
20-39	2.4 $\pm$ 0.9
40-59	4.0 $\pm$ 1.3

Figures are presented below for Seneca age-sex breakdown, again as percentages of traditional responses given to total possible





number of such responses:

Age	Male	Female
20-39	25.0	21.9
40-59	43.1	44.7

It can be seen that males and females have about equal numbers of traditional responses in each age group.

It is interesting to note that the Humphrey group showed  $1.4 \pm 0.6$  symptoms as a whole. Some of those interviewed believed that perhaps a fortune teller could tell the cause of a disease, or perhaps the Little Water Medicine, a traditional Seneca remedy, might actually cure disease.

## DISCUSSION

The question of cultural disintegration and psychiatric disorder among the Seneca is interesting. There is apparently no correlation between age and number of symptoms reported, either in the Seneca or Humphrey groups. This is seen from simple inspection of the means and standard errors. However, there is a correlation between age and number of traditional beliefs reported, again seen from inspection of the means. If the method of computation of correlation coefficients, designated by  $r$ , is employed it can be shown that there is a definite correlation between number of symptoms and traditional beliefs reported (46). Individuals holding four or more traditional beliefs have a significantly higher number of



symptoms (5.1 symptoms,  $r=0.30$ ). Individuals with three or fewer symptoms have a lower mean number of symptoms (3.8 symptoms,  $r=0.25$ ). Again, there is no direct correlation between symptoms and age.

These data show on the surface that more disintegrated culturally groups have better mental health than the more integrated groups. This is, of course, a possibility. But the data can probably be better interpreted in terms of reintegration. The group with fewer links to traditional culture have reintegrated, have fused successfully with Euro-American culture. These are the younger Senecas, who have had more contact with Euro-American culture during their lives than the older Senecas. These older Senecas still have two frames of reference for looking at their environment--the traditional Seneca way and the contemporary American way. These two ways of classifying reality do not always coincide, thus producing mental confusion and stress. It is a long way from the Long House to a lunar landing. But the younger group will have only one predominant cultural outlook--they will not be constantly faced with often conflicting alternatives in each situation. Consequently they show fewer symptoms.

The data show a very much higher number of symptoms for the Seneca women. There is no significant increase with age. This would seem to bear out the observations on the changing status of



women discussed earlier. The low symptom mean for males shows that they have probably faded into the contemporary American cultural background.

Although the data are not always statistically significant, one point should be noted. The Seneca and Humphrey means are greater than the mean for the lower socioeconomic class of Midtown (Table IX). Perhaps the easygoing, simple country life is not all it is claimed to be. Income in the country is less dependable, and more time is available for brooding about life's uncertainties. But this is a complex situation with many other subtle factors involved.

It is interesting that only eight Senecas were admitted to mental hospitals during 1963 and 1964. None were seen as outpatients (47). Figures for Cattaraugus County as a whole were not available, so the exact significance of the Seneca figure cannot be determined.

The relocation of many Seneca families due to dam construction and flooding might have a strong influence on the Senecas. The Senecas lived previously in widely scattered houses. The reservation is situated along the meandering Alleghney River in a forested area rich in wildlife. The resulting atmosphere is very pleasant. From this type of surroundings, many families were to be moved to two resettlement areas, where conditions will be more crowded in a typical suburban pattern. The move with its change in life pattern is very distressing to many Senecas, especially the women. The move from ancestral lands seems to represent a real loss of



security. Senecas had lived for centuries on the reservation lands. The lands are the Indians' last refuge from the white man and the adversities of the outside world. Here the Seneca may always return to live peacefully and simply. Now this refuge and security are gone. The Indian is uprooted and thrust into suburbia. During the summer months spent on the reservation conducting this study, many conversations revealed that this relocation is much more distressing to the Seneca women. The loss of the home with its emotional investment is a tremendous blow. All this is probably reflected in the very high mean number of symptoms of Seneca women. The men, on the other hand, seem to regard the move in more practical polotical and economic terms. They feel that the government is treating them unfairly, now, as the government has always treated the Senecas in the past. The loss of the home itself is regarded with much less emotion by the Seneca men.





### III. COMMENTS ON SOME CROSS-CULTURAL TRENDS

The data for the Maya and Seneca studies have been discussed in detail above. From the several existing studies of the epidemiology of psychiatric disorder in Western and non-Western cultures, several fairly general trends have emerged, and will be presented in the light of the Maya and Seneca studies (48).

1. Culture change with cultural disintegration is associated with an increased prevalence of psychiatric disorder.

Present: Sterling County, Yeruba, Maya

Although several interpretations of the Maya data are possible, the scheme which supports the association of differential disintegration and psychiatric disorder might fit the data best. It is not possible to characterise the Seneca findings in this respect. An hypothesis relating disintegration and the production of psychiatric disorder through malfunction of the social system has already been presented earlier.

2. Women have a higher prevalence of psychophysiological symptoms than men.

Present: Sterling County, Midtown, Yeruba, Eskimo, Mexican, Seneca

A similar situation is seen in all Maya groups except the Tunkas group, where the males show a slightly higher number of these symptoms. It has been suggested that the female human organism is somehow more prone to development of psychophysiological symptoms (49, 50).



3. Men tend to have a higher prevalence of antisocial, acting-out types of behavior than women.

Present: Sterling County, Midtown, Yeruba, Eskimo, Mexican, Seneca, Maya

This is a sort of reciprocal of the previous trend. No explanations for these two trends have been forthcoming. Perhaps acting-out behavior is an extension of the dominant, masculine role in the cultures studied, while psychophysiological symptoms reflect the passive, female role.

But, as shown by the Maya and Sterling County studies, active culture change can produce a notable increase in acting-out behavior among women.

There is evidence that men and women react differently to disease, women having higher morbidity and men higher mortality. In a study of telephone company employees, women had more episodes of acute respiratory and gastrointestinal illness, more visits to the doctor, more time lost. Men had fewer days of disability, due mainly to chronic diseases (51).

4. Increasing age is accompanied by an increasing prevalence of psychophysiological and psychoneurotic symptoms.

Present: Midtown, Sterling County, Mexico, Seneca

This might be explained as reflecting a decrease in cerebral reserve, decreased ability to successfully cope with the material and social environment. But actual reversals were noted in the Yeruba and



Maya groups. In these situations the sex-age group most stressed by culture change had the highest number of symptoms. In the Yeruba cultural setting, young men faced the greatest stresses during culture change and showed the most symptoms. The Tunkas young women were under great stress and had more symptoms than the older women of the town, and a similar situation was found in the Eskimo group. It is notable that the Maya generally did not show more symptoms with age except in the case of the Merida older women. Possibly this mirrors the end result of a life history of constant exposure to culture change.

The exceptions to the above general trends illustrate, again, that the reaction of the individual cultural system to its particular changing environment is the key to interpretation of the epidemiology of psychiatric disorder of the culture.



YUCATAN

GOLFO DE MEXICO

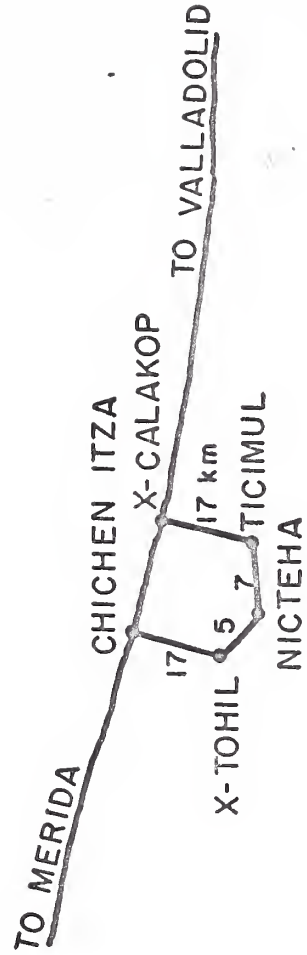
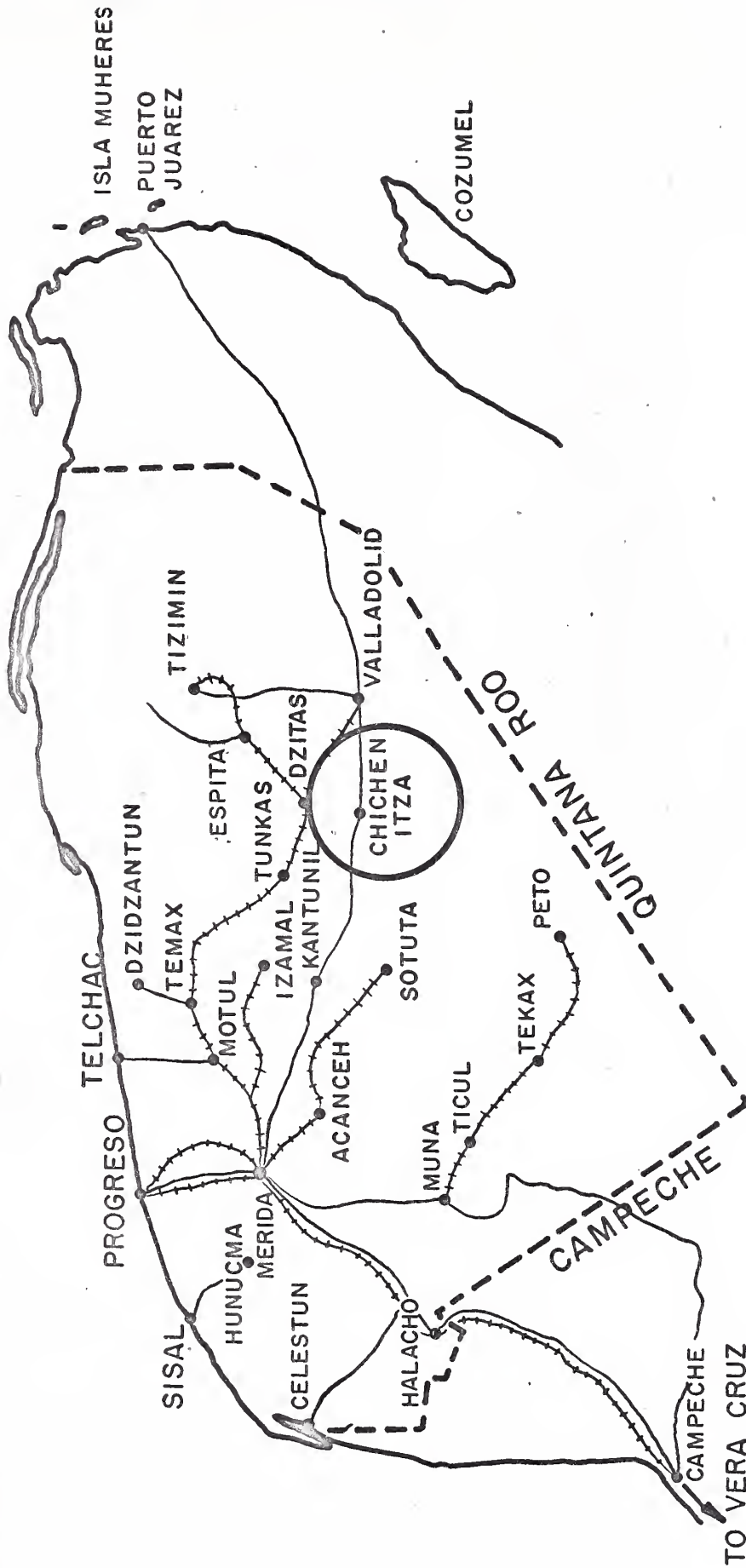


Fig. 1





**FIGURE 2**

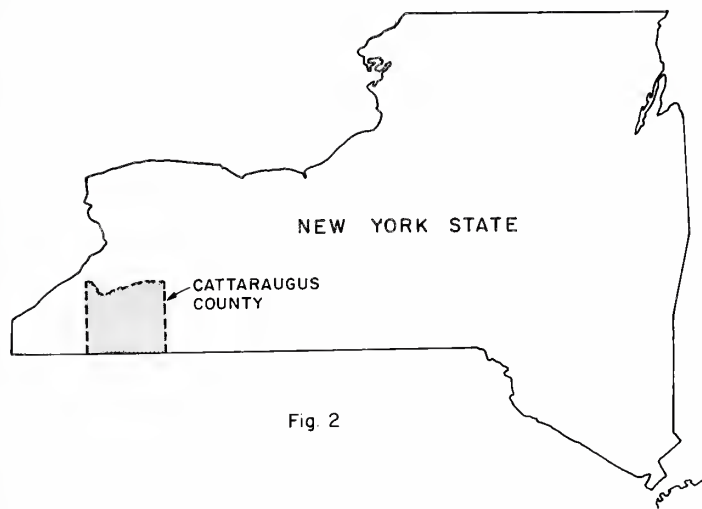


Fig. 2





TABLE I

DISINTEGRATION SCALE	# Integrated Responses		
	M	T	B*
Should obey older brother	40	40	13
Nocturnal bird kills unbaptised child	16	28	30
Should always make hetzmek for child	30	36	40
Gods send evil wind if not pleased	20	18	18
Only h-men with prayer cures serious ills	13	20	15
The chaacs bring the rain	19	30	24
Speak Spanish	22	33	38
Visited witch	33	37	21
Parents should chose spouse	28	32	6
Godparents of hetzmek very important	21	36	40
Know name of Yucatan governor	20	21	16
Name child after saint of birthday	18	36	34
Have been to Merida	0	34	30
Sickness brought by evil winds	16	26	21
Without hanli-eel, maize harvest poor	26	30	18
Like job	29	35	40
Man wears pants in family	39	38	38
Woman can go out alone with man	35	36	40
Stricter parents, better children	25	38	36
Natural for married man to have lovers	24	31	29
Religion	38	30	25
Drunk can give child evil eye	31	30	28
Limes weaken blood	24	29	24
Drink to excess	11	11	16
Better if laws eliminated	18	20	40
Trouble with law	30	36	32
Conduct self by social norms	21	31	37
Care what others think of self	19	23	22
Income, weekly	\$60	\$15	\$50 **
Illiterates	10	17	36
Born where interviewed	17	35	24
Broken marriages	5	2	1
Impression of socioeconomic status	3	1	2

\* M - Merida, T - Tunkas, B - Bush

Note: The first fifteen items are based on Redfield's data (52).

\*\* \$= peso. 12.5 pesos= \$1 U.S.



TABLE II

## 22 ITEM SYMPTOM SCALE

	# Positive Responses			
	M	T	B	C *
Feel weak all over	21	17	6	29
Personal worries get me down physically	23	16	6	26
Clogging in nose	23	19	10	33
Low and very low spirits	21	21	9	28
Nothing turns out right	17	24	9	21
Can't get going	29	25	5	35
Sour stomach often	21	13	9	31
Restlessness	30	32	14	37
Headaches often	10	14	1	9
Cold sweats often	15	19	14	25
Trouble getting to sleep often	15	14	10	25
Fainting (more than a few times)	7	11	1	5
Worrying type	29	23	7	36
Memory not all right	9	9	3	10
Hot all over	20	21	12	29
Shortness of breath often	7	11	4	0
Appetite poor	3	4	0	8
Hands tremble often	9	9	1	1
Heart beats hard often	7	12	1	1
Nervous often	11	10	0	16
Feel somewhat apart even among friends	8	13	12	12
Wonder anything worthwhile, agree	28	22	14	28

\* M - Merida, T - Tunkas, B - Bush, C - Control



TABLE III

## ANTISOCIAL BEHAVIOR SCALE

	# Symptomatic Responses			
	M	T	B	C *
Use alcohol in excess?	11	11	16	14
Get along with everyone?	5	4	3	4
Better off if all laws eliminated?	22	20	0	0
Ever in trouble with law?	10	4	8	4
Ever wanted to beat up somebody?	11	15	13	9
Govern your conduct by accepted norms?	19	9	3	7
Worry what others think of you?	21	17	18	22

## PSYCHOTIC SYMPTOM SCALE

Can concentrate mind on one thing?	15	11	2	20
Feel things not real much of the time?	25	28	5	25
Strong urge at times to do harmful or shocking thing?	13	16	7	11
People say insulting and vulgar things about you?	22	23	3	18
Think you are condemned person?	19	27	0	4
Have spells when couldn't control actions or speech?	23	18	0	7
Somebody trying to influence your mind?	14	13	26	5
Think you are followed?	8	6	0	3
Something happen every day that frightens you?	8	10	1	26
People plotting against you?	26	17	0	5
Afraid of using knife or other sharp object?	12	19	0	25

## DIAZ-GUERRERO NEUROSIS SCALE

Find it difficult to concentrate?	17	16	12	25
Suffer often from the bile?	21	14	9	31
Believe can trust in people?	30	21	7	37
Are you very sensitive?	22	21	4	31
Enjoy self often?	21	17	34	7
Get angry often?	11	16	13	9
Depressed frequently?	23	17	13	31
Consider self nervous person?	23	17	3	35
Happier alone or in company?	18	9	3	13
Life worth living?	6	6	6	2
Get along better with strangers than family?	14	10	1	16

\* M - Merida, T - Tunkas, B - Bush, C - Control

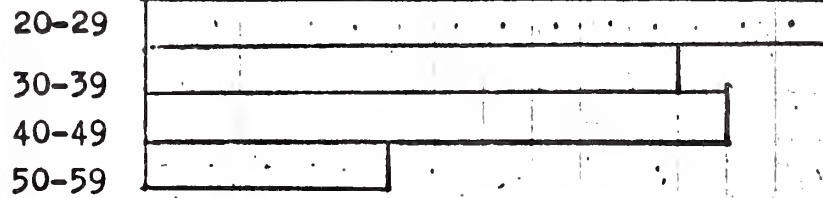




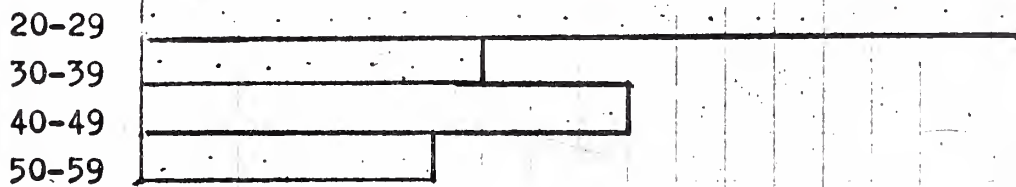
TABLE IV

AGE DISTRIBUTIONS FOR MAYA, SENECA, HUMPHREY SAMPLE GROUPS

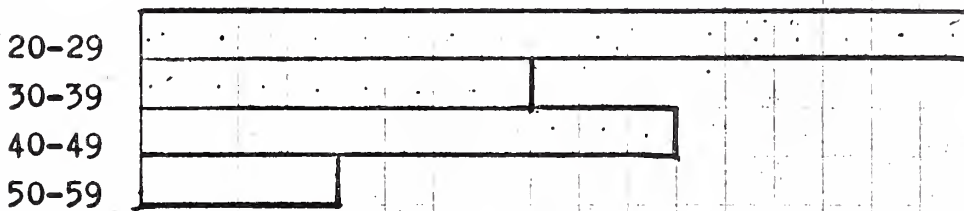
AGE



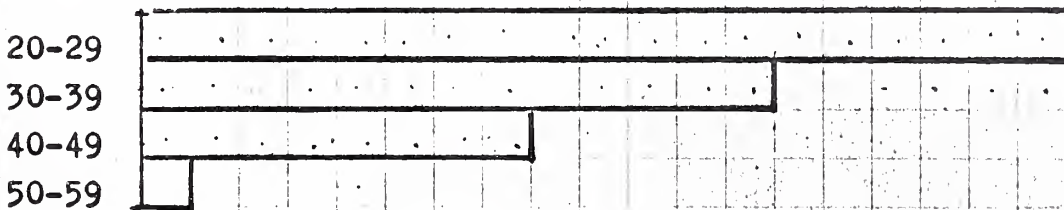
MERIDA



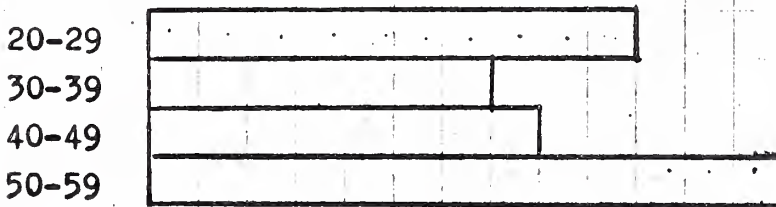
TUNKAS



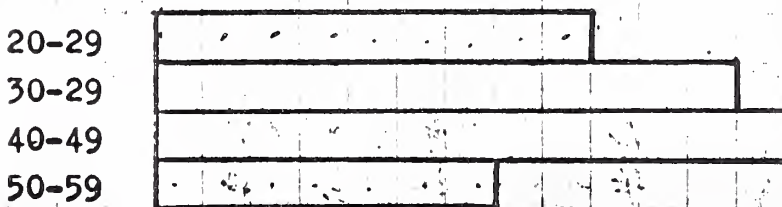
BUSH



CONTROL



SENECA



HUMPHREY



TABLE V

## AYALA HOSPITAL ADMISSION DIAGNOSES

September, 1926	Psychosis Toxica	39.5%
	Manic-depressive Psy.	19.0
21 pts. admitted	Alcoholism	14.3
	Epilepsy	9.5
	Senile Dementia	9.5
	Enterits Aguda	4.7
	Secondary Dementia	4.7
June, 1931	Psychosis Toxica	33.3
	Manic-depressive Psy.	20.0
27 pts. admitted	Mental Confusion	13.3
	Primary Dementia	6.7
	Dementia Praecox	6.7
	Sexual Inversion	3.3
	Senile Dementia	3.3
	Paranoia	3.3
	Neurasthenia	3.3
	General progressive	
	Paralysis	3.3
	Syphilis Cerebral	3.3
January, 1936	Psychosis Toxica	41.7
	Manic-depressive Psy.	17.2
29 pts. admitted	Mental Confusion	13.4
	Paranoia	6.5
	Epilepsy	6.5
	Syphilis Cerebral	6.5
	Toxicomania	3.4
	DT's	3.4
	On Observation	3.4

See note 53.



TABLE VI  
 AYALA HOSPITAL ADMISSION DIAGNOSES\*  
 1956-1964

Schizophrenia	2481
Psychoneurosis	176
Manic-Depressives	128
Alcoholism	432
Parkinsonism	15
Chronic Brain	577
Senile Psychosis	203
Oligophrenia	178
Personality Disorder	82
Epilepsy	408
Depression, Psychotic	189
Psychosis, Metabolic	60
Psychosis, Institutional	153
Psychosis, Anemia	88
Paralysis, General Progressive	15
Neuro-lues	40
Total	5225

\* Data supplied by Dr. Miguel Abimerhi, Merida, Yucatan, Mexico.



# TABLE VII

## AYALA HOSPITAL ADMISSIONS December, 1962 - December, 1963\*

A. Total Admissions= 590

B. Total Admissions with Maya Surnames

Schizophrenia	72
Paranoid Reaction	2
Psychotic Reaction	12
Depression, Psy.	11
Psychosis:	
Pellagra	4
Toxic	4
Postpartum	1
Alcoholic	5
Epilepsy	17
Chronic Brain	11
Deficients	3
Drug Addiction	1
Dx not made	38
Misc.	4
Total	185

\*Data supplied by Dr. Miguel Abimerhi.





## TABLE VIII

### DISINTEGRATION SCALE

Traditional Seneca responses listed with individual items

A fortune teller can tell cause of illness, agree

The Little Water Medicine can cure serious illness, agree

Speak Seneca language, little bit or fluently

Favorite amusements, active

Called for False Faces (healers) when ill

Sacred tobacco has magical powers, agree

Attend Longhouse ("church" of Seneca religion)

Government has good reason for flooding reservation, disagree



TABLE IX

MEAN NUMBER OF SYMPTOMS ON 22 ITEM SCALE

	Male	Female	Total
*Midtown	2.4	3.1	2.8
*Mexico City	4.2	6.1	5.2
Seneca	2.7	5.1	4.4
Humphrey	3.3	3.5	3.6
Merida	6.2	10.2	8.3
Tunkas	9.5	7.9	8.6
Bush	2.9	3.6	3.2
Control	10.2	11.2	10.8

\*See note 54.



TABLE X

DIAGNOSIS OF PSYCHIATRIC OUTPATIENT CONTROLS, 1963\*

Tentative Diagnosis	#
Anxiety Reaction	24
Neurotic Depression Reaction	9
Obsessive-Compulsive Reaction	3
Conversion Reaction	2
No Diagnosis Made at Time of Study	2

\* Data supplied by Dr. Miguel Abimerhi.



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## NOTES

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24. The 22 Item Symptom Scale has been used in two previous cross-cultural studies. In the Mexican study no attempt was made to secure a control group of mentally ill of the same cultural background (Langer, 1965). The 22 Item Scale was also included in the questionnaire of the large scale study of the Yeruba of Nigeria, but the results have not yet been published (Leighton, A., 1963, p. 266). A very similar scale, the Health Opinion Survey (HOS) was also included in the Yeruba study, but as in the case of the 22 Item Scale, the results have not been published. However, the HOS was also used in a recent study of the St. Lawrence Eskimo. In this study, all individuals of the random community sample were given a psychiatric evaluation based on the HOS, history, observations by others, personal interviews, and other information concerning interference of social functioning by illness (Murphy and Hughes, 1965, p. 139). The HOS alone was found to differentiate between well and mentally ill individuals as determined by the comprehensive evaluation outlined above (Murphy and Hughes, 1965, p. 140). The HOS was also able to distinguish between known ill and well groups, determined as above, in a Nova Scotia setting (Leighton, D., 1963, p. 179.).



25. The present study also investigates the validity of the 22 Item Scale in a non-Western cultural situation. Because of the limited nature of the study it was not possible to give each individual interviewed the sort of comprehensive psychiatric evaluation as discussed above. Consequently, this sort of "internal control" was not obtained. However, the questionnaire was administered by a Yucatecan psychiatrist to a randomly selected group of mental outpatients in the Merida Clinic. These patients met the same socio-economic and cultural criteria as the community groups interviewed--they were all lower-class Maya individuals. This is a much more rigid control procedure than those used in the above mentioned studies.
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54. These figures are quoted in Langer, 1965.







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